



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

January 31, 1985

TO ALL PRESSURIZED WATER REACTOR LICENSEES

Gentlemen:

SUBJECT: INADVERTENT BORON DILUTION EVENTS (Generic Letter 85-05)

The purpose of this letter is to inform each licensee of operating pressurized water reactors of the staff position resulting from the evaluation of Generic Issue 22, "Inadvertent Boron Dilution Events" regarding the need for upgrading the instrumentation for detection of boron dilution events in operating reactors.

A boron dilution event is considered as an anticipated operational occurrence which may occur at moderate frequency. The staff has performed analyses of unmitigated boron dilution events for a typical plant for each pressurized water reactor (PWR) vendor. The staff determined that while power excursions during boron dilution events are possible if the operator does not take any action and sufficient volume of dilution water is available, the excursion should be self-limiting. The staff analyses indicate that these type of boron dilution transients should not exceed the staff's acceptance criteria. However, our analyses also show that a few plants may experience slight overpressurization in excess of the 110% overpressure limit in the Residual Heat Removal system if the event occurs during a particular mode of operation.

In addition, the staff recognizes that many operating plants do not have distinct, positive alarms to alert the operators to boron dilution events but rely on other devices such as audible count rate meters. Other problems include lack of alarm redundancy and lack of technical specifications which would prevent operators from taking alarming devices out of service. The staff also does not consider it prudent to credit operators with the ability to recognize a boron dilution event and take the proper mitigative action within specified time limits in the absence of positive boron dilution alarms.

Considering all of the above factors and possible consequences of boron dilution events, the staff has concluded that the criteria in Section 15.4.6 of the Standard Review Plan are adequate and should continue to be applied to plants currently undergoing licensing review. However, the consequences are not severe enough to jeopardize the health and safety of the public and do not warrant backfitting requirements for boron dilution events at operating reactors. The staff will continue to review the analyses of the Boron Dilution Event in reload applications to assure that reasonable confidence is provided that operators can be expected to take the right corrective action using the installed systems.

In summary, while the NRC will not require operating plant backfits for boron dilution events at this time, the staff would regard an unmitigated boron dilution event as a serious breakdown in the licensee's ability to control its plant, and strongly urges each licensee to assure itself that adequate protection against boron dilution events exists in its plants.


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This generic letter is provided for information only, and does not involve any reporting requirements. Therefore, no clearance from the Office of Management and Budget is required.

  
Darrell G. Eisenhut, Director  
Division of Licensing

Enclosure: *See Jacket*  
List of Generic Letters

LIST OF RECENTLY ISSUED GENERIC LETTERS

<u>GENERIC LETTER NO.</u>	<u>SUBJECT</u>	<u>DATE</u>
84-15	Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability	7/2/84
84-16	Adequacy of On-Shift Operating Experience for Applicants	6/27/84
84-17	Annual Meeting to Discuss Recent Developments Regarding Operator Training, Qualifications and Examinations	7/3/84
84-18	Filing of Applications for Licenses and Amendments	7/6/84
84-19	Availability of Supplement 1 to NUREG-0933 "A Prioritization of Generic Safety Issues"	8/6/84
84-20	Scheduling Guidance for Licensee Submittals of Reloads that Involve Unreviewed Safety Questions	8/20/84
84-21	Long Term Low Power Operation in PWR's	10/16/84
84-22	Not used	
84-23	Reactor Vessel Water Level Instrumentation in BWRs	10/26/84
84-24	Clarification of Compliance to 10 CFR 50.49 Environmental Qualification of Electrical Equipment Important to Safety for Nuclear Power Plants	12/27/84
85-01	Fire Protection Policy Steering Committee Report	1/9/85
85-03	Clarification of Equivalent Control Capacity For Standby Liquid Control Systems	1/28/85
85-04	Operator Licensing Examinations	1/29/85
85-05	Inadvertent Boron Dilution Events	1/31/85